

### **Withdrawal of Rejections**

Applicants appreciate the withdrawal of the rejection by the Examiner of claims 1, 8, 12, 14, and 23 under 35 U.S.C. § 112 as well as the rejection of claims 1-11 under 35 U.S.C. § 102(b) by GB 2311527.

### **Rejection of Claims 1-23 under 35 U.S.C. § 103(a)**

The Examiner has rejected claims 1-23 under 35 U.S.C. § 103(a) as being unpatentable over GB 2311527 (GB '527) in view of GB 2296915 (GB '915). In paragraph 5 of the Final Office Action, the Examiner incorporates item 6 from the previous Office Action by reference. In paragraph 6 of the final Office Action, the Examiner also states that GB 2311527 (GB '527) teaches silica powder having a particle size of 3-10 nanometers. The Examiner concludes that, even if the particle size of GB '527 is the primary particle size and the primary particles adhere to one another to make aggregates which combine to form agglomerates, it would be reasonable to infer that the agglomerates formed from the primary particles of GB '527 (of 10 nanometers each) can be less than 25000 nanometers. The Examiner states the opinion that GB '527 does satisfy the claimed particle size limitation. Applicants respectfully disagree.

The present application describes powder coating compositions comprising at least one powdered polymer and a metal oxide. Claims 1-11 disclose a composition wherein the metal oxide has been size-reduced to a mean agglomerate particle size of less than about 25 microns. Claims 12-13 disclose a composition comprising the reaction product of fumed silica and hexamethyldisilazane, wherein the reaction product has been size-reduced to a mean agglomerate particle size of less than 10 microns. Claims 14-22 disclose a composition comprising the non-deammoniated reaction product of at least one metal oxide and hexamethyldisilazane, wherein the reaction product has been size-reduced to a mean agglomerate particle size of less than about 25 microns. Claim 23 discloses a composition comprising a flatting agent that is the non-deammoniated reaction product of fumed silica and hexamethyldisilazane, wherein the reaction

product has been size-reduced to a mean agglomerate particle size of less than about 25 microns.

Contrary to what the Examiner believes, GB '527 does not teach or suggest a metal oxide with an agglomerate particle size of less than about 25 microns. The finely divided hydrophobic silica powder used in GB '527 <sup>is</sup> ~~are~~ disclosed as having a number average primary particle size from 3 to 10 nm. These are not the metal oxides used in the powder polymer compositions of the present invention. There is no disclosure of the agglomerate particle size of this hydrophobic silica powder. Furthermore, the Examiner has provided no evidence to support the conclusion that the hydrophobic silicas of GB '527 have been sized reduced to a mean agglomerate particle size of 25 microns or less. Rather, the Examiner has inferred that a primary particle size of 7 nm would necessarily mean that the agglomerate particle size would have to be less than 25000 nm (i.e., 25 microns). In fact, this is contrary to what one of ordinary skill in the art would expect. *It is known that primary particle size and agglomerate particle size are independent morphological properties and cannot be correlated with each other.* Metal oxides are formed by the aggregation of primary particles which, in turn, form agglomerates. The size of the primary particles are typically in the 10 nm range while the aggregate particle size is quite often 100-250 nm. However, agglomerates of these aggregates are several orders of magnitude larger – generally in the 50-100 micron range or larger. For example, section 3.2 of the technical brochure entitled “Basic Characteristics of AEROSIL®” from Degussa, enclosed with this response, clearly shows that AEROSIL products (such as those preferred in GB '527) contain agglomerates of about 10 to 200 microns (see page 22, as well as the micrographs shown in section 3.2.1). The mean agglomerate particle size of a metal oxide depends on a wide variety of factors, including, for example, type of metal oxide, surface chemistry (hydrophobic versus hydrophilic), and processing conditions, and cannot be predicted from its primary particle size. Therefore, it does not follow that the hydrophobic silica of GB '527 would necessarily have a mean agglomerate particle size of 25 microns or less, knowing only that the primary particle size was 7 nm.

Since the mean agglomerate particle size of the hydrophobic silica of GB '527 is not disclosed, and since hydrophobic silicas agglomerate to form very large particles with mean

agglomerate particle sizes that cannot be predicted from their primary particle sizes, one skilled in the art would not have inferred that the hydrophobic silica of GB '527 would have a mean agglomerate particle size less than 25 microns. Furthermore, GB '527 does not teach or suggest that the hydrophobic silica has been sized-reduced, and, certainly, not size-reduced to the mean agglomerate particle sizes disclosed in the present invention. Thus, Applicants believe that GB '527 does not teach or suggest the powder polymer compositions of claims 1-23.

GB '915 does not cure the deficiencies of GB '527. GB '915 discloses surface-modified pyrogenically produced metal oxides. However, there is no teaching or suggestion in GB '915 of a metal oxide having a mean agglomerate particle size of less than about 25 microns. In addition, GB '915 does not teach or suggest a metal oxide that has been size-reduced. Therefore, Applicants believe that GB '915 does not teach or suggest the powder coating compositions of claims 1-23.

Finally, Applicants believe that, since neither GB '527 nor GB '915 teach or suggest a powder coating composition comprising a metal oxide that has been size-reduced to a mean agglomerate particle size disclosed in the present invention, the combination of these two references cannot produce the powder coating composition of claims 1-23. If one were to combine the teachings of GB '527 and GB '915, one would attempt to use the surface-modified pyrogenically produced metal oxides of GB '915 in the compositions of GB '527. However, as discussed in more detail above, this is not the powder coating composition of the present invention.

Therefore, Applicants believe that claims 1-23 of the present application are patentable over GB '527 in view of GB '915 and respectfully request that this rejection be withdrawn.

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### Conclusions

Applicants believe that this application is considered to be in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, that a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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